REMARKS

Applicants request favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 71, 73-75, and 77-88 are presented for consideration. Claims 71, 75, 79, 82, and 86 are independent. Claims 71, 75, 79, 82 and 86 have been amended to define still more clearly what Applicants regard as their invention, in terms which distinguish over the art of record. . Support for these amended claims may be found in the original application, as filed. Therefore, no new matter has been added.

Claims 71, 82 and 83 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,648,874 (Sawaki et al.). Claims 73, 74, 84 and 85 have been rejected 35 U.S.C. § 103(a) as being unpatentable over Sawaki et al. With regard to the claims as currently amended, these rejections are respectfully traversed.

Independent Claim 71 as currently amended is directed to a diffractive optical element used for an optical system of an exposure apparatus. The diffractive optical element has an effective area, a peripheral area that surrounds the effective area, a light shielding member composed of a laminated layer of Cr oxide and Cr disposed on the surface of the peripheral area and a holding frame. The laminated layer includes an alignment mark that centers the effective area in the holding frame.

Independent Claim 82 as currently amended is directed to a diffractive optical element used for an optical system of an exposure apparatus. The diffractive optical element has an effective area, a peripheral area that surrounds the effective area, a light shield member composed of any one of (i) chromium, aluminum, molybdenum, tantalum and tungsten, (ii) a laminated structure of any one of chromium, aluminum, molybdenum, tantalum or tungsten and any one of chromium oxide, silicon oxide or aluminum oxide, (iii) a compound material of a metal and silicon, and (iv) a compound of any one of molybdenum or tungsten and silicon, silicon, or titanium oxide, disposed on the face of the peripheral area and a holding frame. The light shielding member has an alignment mark that centers the effective area in the holding frame.

In Applicants' view, Sawaki et al. discloses an optical apparatus having a first lens array consisting of plural lenses that form a reduced image in reversed orientation. A second lens array having plural lenses arranged at corresponding positions to the lens of the first lens array form an erected equal magnification image from the reduced image by expanding the reduced image in the given magnification. One or more light shielding films arranged between the first lens array and the second lens array have through openings to pass light discharged from respective lens of the first lens array at positions corresponding to respective lens of the first lens array in opposition to respective lens that pass discharged light from respective lens of the first lens array.

According to the invention defined in Claims 71 and 82 as currently amended, the diffractive optical element includes a holding frame and the light shielding member has an alignment mark that centers the effective area of the diffractive optical element in the holding frame. The feature of the holding frame in Claims 71 and 82 is disclosed at least at line 22 of page 13 in the specification and the feature of the alignment mark centering the effective area in the barrel (holding frame) is disclosed at least at lines 1-6 of page 17 in the specification. No new matter is believed to have been added.

Sawaki et al. may show a marker in Figs. 13, 15 and 16. As clearly disclosed at lines 58-63 of column 15 in Sawaki et al.,"At a portion on the end of the substrate, a reference point, i.e. marker, is formed by etching for determining positions of subsequently formed lens and light shielding film." As a result, Sawaki et al.'s marker etched in a substrate only determines positions of a later formed light shielding film. Accordingly, it is not seen that Sawaki et al.'s marker on a substrate to be used to determine subsequent positions of light shielding film could possibly be the alignment marker included on a surface of a light-shielding member of Claims 71 and 82 or that Sawaki et al. in any manner teaches or suggests an alignment mark in a light shielding member for centering the effective area of a diffractive optical element in the holding frame of the diffractive optical element as in Claims 71 and 82. It is therefore believed that Claims 71 and 82 as currently amended are completely distinguished from Sawaki et al. and are allowable.

Claims 75, 77-81 and 86-88 have been rejected 35 U.S.C. § 103(a) as being unpatentable over Sawaki et al. With regard to the claims as currently amended, this rejection is respectfully traversed.

Independent Claim 75 as currently amended is directed to a diffractive optical element used for an optical system of an exposure apparatus. The diffractive optical element has an effective area, a peripheral area surrounding the effective area, a light shielding member composed of a material selected from the group consisting of TiC, TiN, ZrC, HfC and HfN, disposed on the surface of the peripheral area and a holding frame. The material disposed on the surface of the peripheral area includes an alignment mark that centers the effective area in the holding frame.

Independent Claim 79 as currently amended is directed to a diffractive optical element used for an optical system of an exposure apparatus. The diffractive optical element has an effective area, a peripheral area surrounding the effective area, a light shielding member composed of an acrylic or epoxy light-shielding ink disposed on a face of the peripheral area and a holding frame. The light shielding member has an alignment mark that centers the effective area in the holding frame. The light shielding ink is not exposed to the outside of the diffractive optical element.

Independent Claim 86 as currently amended is directed to a diffractive optical element that has an effective area, a peripheral area surrounding the effective area, a light shielding member disposed on a surface of the peripheral area and a holding frame. The light shielding member includes an alignment mark that centers the effective area in the holding frame.

It is a feature of Claims 75, 79 and 86 as currently amended that a diffractive optical element has a holding frame and that a light shielding member on a face of the peripheral area includes an alignment mark for centering the effective area of the diffractive optical element in the holding frame. As discussed with respect to Claims 71 and 82, Sawaki et al. only teaches an alignment mark etched on a substrate that determines positions of subsequently formed lens and light shielding film but is devoid of any suggestion of a light shielding member having an alignment mark for centering the effective area of a diffractive optical element in the holding

frame of the diffractive optical element. Accordingly, it is not seen that Sawaki et al.'s etched mark in a substrate in any way suggests an alignment mark in a light shielding member on a face of a diffractive optical element periphery area that centers the effective area of he diffractive optical element in the holding frame of the diffractive optical element as in Claims 75, 79 and 86. It is therefore believed that Claims 75, 79 and 86 as currently amended are completely distinguished from Sawaki et al. and are allowable.

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

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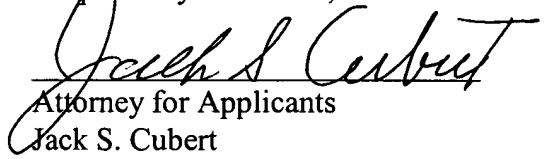
Respectfully submitted,



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